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EPAct Test Programs in ASD

14th Bi-Weekly Report

August 28, 2008

1. Light Duty Gas Exhaust Fuels

Contractor: SwRI, EP-C-07-028, WA 0-1
WAM: Connie Hart
Alt. WAM: Rafal Sobotowski
Other team members: Carl Scarbro, Mike Christianson, Tony Fernandez, Carl Fulper, Aron Butler
Budget: $4.3M, plus $3M in collaboration with NREL

Objective: Phases 1 and 2 are in support RFS 2 NPRM and Phase 3 is to establish the effects of RVP, T50, T90, aromatic and EtOH content on exhaust emissions from Tier 2 vehicles

Time Line

- Testing began by second week of April
- Phase 1 and half of Phase 2 finished by the end of June: Fuels 17 and 18 of Phase 1 were complete by end of June. Fuel 19 by end of July due to fuel delivery delays.
- Phase 3 will be finished May 2009: Phase 3 to be complete by October 2009 between testing/fuel delays to date and additional CRC fuels added into our random matrix.

Program Status:

- Fuel status for Phase 3:
  - Visit with Gage in Detroit on August 6 was successful. Met with the President and VP of Quality. Doug Lawson and Steve Przesmitski of NREL , Rafal, Aron and Kevin Whitney of SwRI were present.
  - A revised Fuel Matrix has been proposed which reduces the number of E15 fuels and increases the number of E20 fuels making them more blendable. The total number of fuels remain the same.
  - Refinery tool does not predict distillation curve with accuracy. Rafal and Aron are working with software designers to include algorithm. Rafal has been adjusting blends manually. He designed one fuel, number 9, before vacation (he returns on Sept 9).
  - Halterman has prepared the handblend for fuel number 9 and is out of spec on a few parameters. They will work on adjustments which we have limited to four iterations. They should have this complete by early next week.
- All data is in for Fuel 17, 18 and 19.
- Data/Analysis:
  - Dataset from Fuel 19 has been QA/QC'd and is in analysis phase.
  - George Hoffman has submitted results from his analysis of all three fuels emissions data.
  - A Briefing has been scheduled for Chet on September 4. One for Margo is planned for sometime in September, to review data from fuels 17, 18 and 19.

- Cay Yanca is working on Toxics data analysis.

- The managers had a call with Joan Glickman and Kevin Stork of DOE. There was a concern over our not sharing the data. The controversial nature of the data was explained and agreements were made on confidentiality. They wanted to make sure we would not block them from the data that they are paying for directly.
- Phase 2 cold room construction began Tuesday, August 26. Also upgrading Horiba instruments to include Methane Cutter and the Dilute Nox Analyzer. Should be complete and Phase 2 testing should begin by September 8.
- Discussions are continuing on extra testing during vehicle downtime between Phase 2 and Phase 3 before enough fuels have been delivered to initiate the testing.

2. Oil Study

Contractor: NVFEL
Project lead: Mike Christianson, Rafal Sobotowski
Budget:

Objectives: Results to impact Phase 3 of EPAct study at SwRI (July)
Objective 1: Define duration of engine oil conditioning needed to stabilize the effect of oil volatility on PM emissions
Objective 2: Define the impact of lubricant interaction with fuel ethanol on PM emissions

Time Line

- Estimated duration of pilot: 15 weeks (May 11)

Program Status:

- Meeting with Ewa Bardez of Lubrizol 8/8/08 a success
- In-use fuel (Brewers) determined to be BP E10 gasoline
- Additional data analysis to be conducted by George Hoffman as second priority (after SwRI data)
- Chet briefing on final analysis results as next step

3. PM Speciation

Contractor: NVFEL
Project lead: Mike Christianson, Marion Hoyer
Other team members: Carl Scarbro, Rafal Sobotowski, Joe McDonald
Budget: $345K ($55K on inventory and data issues from other EPAct programs)

Objective: To determine fuel effects on PM mass, size and composition, and obtain speciated semi-volatile VOC, metals and ions, and gaseous VOC (MSATs), alcohols and carbonyls.

Time Line: Late 2008

Program Status:

- ORD and NVFEL round-robin planning continues.
    - Site modifications needed to become 1065 compliant
        - dP for tailpipe depression
        - Humidity control for dilution air
        - NFVEL PM tunnel may be sent down
- ORD site visit planned for mid-september
- AVL Toxic sampler delivery is still the biggest unknown for program start

4. Nonroad Exhaust Program

Contractor: Carnot Intertek
WAM: Carl Scarbro
Alt. WAM: Cheryl Caffrey
Budget: $830K

Project Overview:

Objective: Testing 6 paired engines including 2 Class 1, 2 Class 2, 2 Class 4, (one Class 2 engine has catalyst) on three fuels; national average non-oxy gasoline (Fuel A), an octane matched E10 (Fuel B), and a certification fuel (E0).

Timeline

- The original program was to be completed last year
- Should begin by April 1st and finish in October of this year: delays in schedule due to fuel delivery status.

Program Status

- Intertek Carnot: Small SI engine testing - E0 and E10 emission testing on baseline and aged engines - Class I, II and IV. Work is 33% complete. Estimated completion in November 2008.
- DOE: Brian West from NREL is assembling a sole source to continue work on the small SI engines at Intertek Carnot with E15 and E20. Two hundred gallons of EPAct fuel #19 is available and will be used for this project. Intertek will splash blend additional ethanol for making E20.

4.a. Nonroad Exhaust tie-in with CARB

Contractor: SwRI
WAM: Cheryl Caffrey
Alt. WAM:
Other team members: Carl Scarbro, Tony Fernandez
Budget: $500K

Program Status

- SwRI: Work assignment is being resubmitted, in the week of August 25, to SwRI to perform exhaust and evap testing measuring primary pollutants, Ammonia, N2O, speciation, etc. This work fills in the gaps between ARB and DOE data.
- ARB: Work at SwRI on small SI engines and 1 large SI engines will begin. Fuel arrived week of Aug 18. EPA will be receiving a summary of ARB's nonroad test programs based on summary for internal review on Aug 26.

5. Evap Testing

Contractor: SwRI, EP-C-07-028, WA 0-4
WAM: Connie Hart
Alt. WAM: Dave Brzezinski
Other team members: Carl Scarbro, Tony Fernandez
Budget: $600K

Objective: Additional, newer technology, high sales volume vehicles to the CRC E-77-2 permeation test program.

Time Line: Testing from June 2008 thru June 2009: Testing will not start until end of summer.

Program Status:

- A revised Work Plan has been requested for more clarification and division of hours for this contract year from the total project.

6. Determine Percent of High Evaporative Vehicles in Fleet

Contractor: ERG, EP-C-06-080, WA 1-2
WAM: Connie Hart
Alt. WAM: Dave Brzezinski
Other team members: Carl Scarbro, Carl Fulper, Tony Fernandez, Jim Warila
Budget: $1M

Objective: Find the percentage of high emitting evaporative emission vehicles in the average fleet of on-road motor vehicle passenger cars and light trucks.

Time Line

- ICR clock started with Federal Register notice 2/14/08
- SOW package went to Cincinnati 2/22/08
- Approval of Work Plan by March 24: Work Plan was approved June 19 (after CRADA signed).
- Contractor to supply supporting documents for ICR submission March 31: delivered May 8th.
- Another 30 day comment period for ICR, roughly month of May.
- Goal is to have ICR in place by mid-June for recruitment and pilot field work to begin. Partial ICR approval has been given for the Pilot phase.

- Finalize test procedure for larger program by August 22 so recruitment can begin for field work in Sept and October
- Compile data and draft report by early December of 2008

Program Status:

- ERG has been soliciting and testing vehicles since July 28th. They have completed evaluations of 75 vehicles. The portable SHED (PSHED) looks especially encouraging with very high propane retention and correlation to lab SHEDs.
- Connie Hart went to Colorado the last few weeks to oversee the project. She was able to help them make adjustments as needed and start the big picture thinking for the larger program.
- We need to resubmit an ICR for the larger program to attain approval for field deployment in the fall. We need time to digest and analyze the data from the pilot to to finalize a robust plan for the larger program. Meetings with the Center Managers we have the following plan for the larger program:
    - Emphasize enhanced evaporative vehicles in order to characterize them better in our modeling of the future fleet.
    - Stick to original plan on characterizing a non-IM area to have a more accurate baseline in our modeling.
    - Looked at other possible cities with year round temperatures to complete this project by the end of this calendar year, but the decision was made to stick with San Antonio.
    - Using San Antonio as our location limits our field time to the end of October and starting up again in the spring. One issue OMB had with our ICR was that the pilot was in an IM area and larger program in non-IM. We will submit our new document calling this another mini-pilot for the recruitment in a non-IM area (the Denver Pilot we worked out the equipment methodologies).